

CLAIMS

What is claimed is:

- 1 1. A package comprising:
2 a die including an active surface;
3 a substrate electrically coupled with the active surface; and
4 an interposer between the die and the substrate, wherein the interposer has a
5 body with a first surface, an opposite second surface, and a channel passing through
6 the body from the first surface to the second surface.
- 1 2. The package of claim 1 wherein the channel lies in the die shadow
2 region.
- 1 3. The package of claim 2 wherein the channel is a vent hole to
2 facilitate capillary flow of underfill mixture dispensed between the interposer and
3 the substrate.
- 1 4. The package of claim 3 wherein underfill mixture is dispensed
2 between the interposer and the substrate, wherein a meniscus of the underfill
3 mixture is formed within the vent hole, and the meniscus substantially prevents the
4 underfill from exiting the first surface of the interposer.
- 1 5. The package of claim 1 wherein the channel lies outside of a die
2 shadow region.
- 1 6. The package of claim 5 wherein the channel is a microchannel
2 through which underfill is dispensed.
- 1 7. The package of claim 1 wherein there are at least two channels
2 formed in the interposer.

1 8. The package of claim 7 wherein the at least two channels in the
2 interposer includes a vent hole within a die shadow region and a microchannel that
3 lies outside of the die shadow region, wherein underfill is dispensed into the
4 microchannel and between the interposer and substrate.

1 9. A packaging system comprising:
2 a die;
3 a substrate electrically coupled with the die;
4 an interposer between the die and the substrate, wherein the interposer has a
5 body with a first surface, an opposite second surface, and a channel passing through
6 the body from the first surface to the second surface; and
7 underfill mixture dispensed between the interposer and the substrate using
8 capillary flow.

1 10. The packaging system of claim 9 wherein the channel is substantially
2 centered in the interposer.

1 11. The packaging system of claim 9 wherein the channel is a vent hole
2 within a die shadow region.

1 12. The packaging system of claim 9 wherein the channel lies outside of
2 a die shadow region.

1 13. The packaging system of claim 12 wherein the die shadow region
2 extends from an active surface of the die through the interposer to the second
3 surface.

1 14. The packaging system of claim 9 wherein there are at least two
2 channels formed in the interposer, including a channel within a die shadow region,
3 and a channel that lies outside of the die shadow region.

1 15. A process comprising:
2 forming a channel through a channel body from a first surface of an
3 interposer through to an opposite second surface of the interposer;
4 disposing the interposer between a die and a substrate; and
5 dispensing underfill between the interposer and the substrate, wherein the
6 channel is at least one of a vent hole to facilitate capillary flow of the underfill
7 mixture, and a microchannel through which the underfill mixture is dispensed.

1 16. The process of claim 15 wherein air escapes from between the
2 interposer and the substrate through the vent hole as the underfill mixture is
3 dispensed.

1 17. The process of claim 15 wherein the vent hole is substantially
2 centered in the interposer.

1 18. The process of claim 15 wherein the microchannel lies outside of a
2 die shadow region.

1 19. The process of claim 18 further comprising positioning an underfill
2 dispenser nozzle to the first surface of the interposer at the channel.

1 20. The process of claim 19 further comprising positioning an underfill
2 dispenser nozzle adjacent an outer edge of the die to dispense the underfill mixture
3 in the channel.

1 21. The process of claim 15 further comprising positioning the vent hole
2 within a die shadow region, and positioning an underfill dispenser nozzle adjacent
3 an outer edge of the die to dispense the underfill mixture through the microchannel
4 and between the interposer and the substrate.

1 22. The process of claim 15 further comprising dispensing the underfill
2 mixture from a plurality of underfill mixture dispensers substantially simultaneously
3 while allowing air to escape from between the substrate and the interposer via the
4 vent hole.

1 23. The process of claim 22 further comprising forming a plurality of
2 microchannels in the interposer about the die, wherein the plurality of dispensers are
3 positioned at the plurality of microchannels, respectively, to dispense the underfill
4 mixture.